

BASKAKOV, V.S.; VIKHLYAYEV, V.M.; GAVRILOV, R.I.; GREBNEV, P.A.; ZHEMCHUZHNIKOVA, Ye.Ye.; IDEL'SON, I.D.; MEN'SHIKOV, N.S.; MOROZOVA, Yu.G.; POPOV, V.A.; FEDOROV, S.P.; PAVLOV, Ye.M., dotsent, kandidat tekhnicheskikh nauk, redaktor; ZHIGLINSKIY, A.A., inzhener, redaktor; RUNICH, K.M., inzhener, redaktor; SOKOLOVA, L.V., tekhnicheskii redaktor

[A collection of drawings for parts used in machine building] Sbornik mashinostroitel'nykh chertezhei dlia detalirovok. Izd. 2-oe, dop. 1 perer. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry. 1956. 1 v., 50 l. (MIRA 10:2)

(Machinery--Design)

Automotive Industry: NIITavtoprom.

Submitted : No date

POPOV, VIKTOR A.

DUBININ, Nikolay Petrovich, kandidat tekhnicheskikh nauk; ZHAYUNOV, Petr Prokhorovich, kandidat tekhnicheskikh nauk; STOROZHEV, Mikhail Vasil'yevich, kandidat tekhnicheskikh nauk; POPOV, Yevgeniy Aleksandrovich; LEZAROV, Sergey Tikhonovich, kandidat tekhnicheskikh nauk; GLADILIN, Anatoliy Nikolayevich, kandidat tekhnicheskikh nauk; KRASAVIN, Vasil'y Stepanovich, kandidat tekhnicheskikh nauk; PANCHENKO, Konstantin Petrovich, kandidat tekhnicheskikh nauk; POPOV, Viktor Aleksandrovich, kandidat tekhnicheskikh nauk; KOSTORGUTAY, Ivan Sergeyevich, kandidat tekhnicheskikh nauk; SHENSHURINA, Ye.A., redaktor; UVANOVA, A.S., tekhnicheskij redaktor; MOSEL', B.I., tekhnicheskij redaktor

[Technology of metals] Tekhnologiya metallov. Pod red. N.P. Dubinina. Izd. 3-e. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 564 p. (Metals) (Metalwork) (MMA 10:10)

ACC NR: AT7011645

SOURCE CODE: UR/0000/66/000/000/0001/0007

AUTHOR: Rozanov, Yu. A.; Sil'vestrov, M. M.; Popov, V. A.

ORG: none

TITLE: Informational model of motion dynamics and space extravehicular orientation of astronauts

SOURCE: International Astronautical Congress. 17th, Madrid, 1966. Doklady. no. 7. 1966. Informatsionnaya model' dinamiki dvizheniya i prostranstvennaya oriyentirovka kosmonavta vne korablya, 1-7

TOPIC TAGS: individual maneuver, EVA, information model, astronaut orientation, spatial orientation, visual feedback, extravehicular movement, weightlessness

ABSTRACT:

Systems for individual maneuvering during extravehicular activity must include power units to provide angular and linear movement, angular velocity stabilization devices for stopping angular rotation, and information feedback to guide the astronaut in controlling his movements. Types of feedback information which are essential include: 1) information on the angular position of the body, relative to the "line-of-sight"

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ACC NR: AT7011645

(astronaut-to-spacecraft) in yaw and pitch and relative to the spacecraft in roll; 2) angular velocity of the "line-of-sight", i.e., the lateral component of relative velocity; 3) speed of approach (or departure); and 4) relative distance. Ordinarily, under terrestrial conditions, much such feedback information comes from the statokinetic analyzers and from visual observation of surrounding objects; both these information sources are severely limited in space by the absence of gravity and of nearby visual reference points. Experimental studies were undertaken to discover which of these kinds of information should be emphasized in an informational model of spatial motion, and what sort of display should be utilized in such a system. It was found that relative distance and approach and departure speed were the most difficult control parameters to estimate visually (using changes in the apparent size of the object approached). Various methods of feedback (verbal cues from the spacecraft pilot, auditory signals, and visual information displays) were used to supplement visual estimation. Luminous lines painted on the spacecraft hull aid in perceiving its position and orientation when it is in shadow. Orig. art. has: 1 figure. /ATD PRESS: 5098-F/

Card 2/2 SUB CODE: 06,22 / SUBM DATE: none

ACC NR: AP7002683

SOURCE CODE: UR/0247/66/016/006/0974/0983

AUTHOR: Popov, V.A.; Simonov, P.V.; Tishchenko, A.G.; Frolov, M.V.;
Khachatur'yants, L.S.

ORG: none

TITLE: Analysis of the intonational characteristics of speech as an
index of emotional state in humans under spaceflight conditions

SOURCE: Zhurnal vysshey nervnoy deyatel'nosti, v. 16, no. 6, 1966,
974-983

TOPIC TAGS: manned space flight biotelemetry, bioastronautics,
psychologic stress, speech analysis, emotional tension, emotion, space
psychology, human engineering, speech spectrum ~~Psychology~~

ABSTRACT: A method is described for analyzing the spectral characteristics of
speech (frequency, intensity of articulatory components) which can serve
as a reliable index of emotional state. Increased emotional tension is
accompanied by increases in articulatory frequency F and signal intensity
 A , i.e., by an increase in the moment of articulation $M_F = A \cdot F$. Monitoring
of sympathetic indices (pulse, respiration, etc.) concurrently with the
parameter M_F provides a more reliable evaluation of operator state and
permits differentiation of physical from emotional tension. Human

Card 1/3

UDC: 612.821

ACC NR: AP7002683

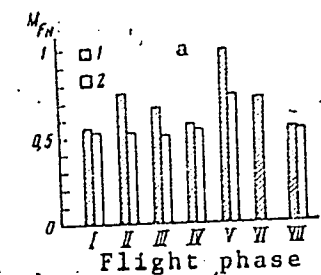
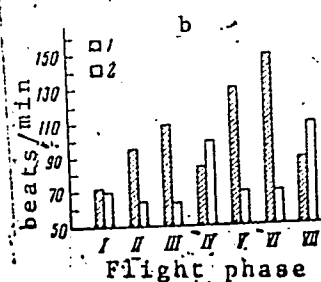


Fig. 1. Comparison of indices of emotional state (speech characteristic and pulse rate) of Leonov during spaceflight and preflight rehearsal



Cord 2/3

ACC NR: AP7002683

emotions modeled by Stanislavski-method actors were used to check the speech intonation analysis method. Considerable changes in the actors' heart rhythms during these tests attest to the presence of genuine emotion. The method described was used for actual determination of A. A. Leonov's emotional state during his EVA on the Voskhod-2 flight. The cosmonaut's physical strain was successfully differentiated from emotional tension. A graph is given comparing results obtained for a) the speech characteristic M_f , and b) pulse rate at various stages of 1) actual flight, and 2) thermal pressure chamber rehearsals. Computer analysis will permit more exact correlation of the spectral characteristics of speech sounds with various degrees of positive and negative emotions.

SUB CODE: 06, 05/ SUBM DATE: 14Jun66/ ORIG REF: 007/ OTH REF: COL
ATD PRESS: 5113

Card 3/3

L 3773-66 ENT(π) DIAAP GS

S/0000/64/000/000/0791/0794

ACCESSION NR: AT5007950

AUTHOR: Davydov, M. S.; Dorfman, L. G.; Yekimov, V. V.; Zaimanov, V. B.; Zeytlov, G. A.; Levin, V. M.; Malyshev, I. F.; Petelin, I. G.; Petrunin, V. I.; Popov, V. A.; Trushin, M. Kh.; Umanskiy, I. G.; Finkel'shteyn, I. I.

TITLE: Deflecting system of 5-Gev antiproton channel

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 791-794

TOPIC TAGS: antiproton, high energy particle, particle beam, high energy accelerator

ABSTRACT: Specific requirements flowing from the applied principle of particle resolution have determined the choice of the type of deflecting system. During development of the device the requirements were also considered from the viewpoint of the high-frequency power supply system. The creation of a high-power 150-megahertz frequency generator that operates with pulses of several milliseconds duration is a technically complex task. Therefore, special attention was given during the development of the deflecting system to its economy and efficiency. Taking these considerations into account, computations were carried out of a number of

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ACCESSION NR: AT5007950

alternate deflecting systems--in the form of a waveguide or band line operating in the energy recuperation regime, or in the form of a system of many-cavity or single-cavity volume resonators. As shown by the computations, it is most expedient to make the deflecting system in the form of a set of independently phased resonators of the quasitoroidal type, which operate in the fundamental mode of the electric oscillations, with the use of high-frequency electrical field for deflecting the particles. The report discusses the resonators employed in the deflecting system and their arrangement in the system. The chosen resonator form permits one to obtain a specific homogeneity of the deflecting field in the cross section of a beam by selection of suitable dimensions. The report discusses the characteristics of the developed system. The linear dimensions of the apertures in the resonators for channeling the beam are commensurable with the operating wavelength, which fact leads to the radiation of electromagnetic energy and to the appearance of a strong bond among the resonators. In order to eliminate this phenomenon and preserve complete transparency of the channel for the beam of deflected particles among the resonators, the waveguide segments are provided with limiting wavelength much lower than the operating one, and feedback is introduced in the magnetic field. As shown by investigations, the bond among the resonators is almost completely eliminated. Considerable attention was paid to the electric transparency of the resonators.

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ACCESSION NR: AT5007950

tors. The field strength in the resonator gaps which corresponds to a given magnitude of the deflecting pulse was determined on the basis of the field pictures that were taken in an electrolytic tank. Corrections were made for the variation in the high-frequency field during the particles' flight time through a resonator and for the difference between the static and high-frequency pictures of the field in a gap. Measures were also taken to eliminate in the resonators the secondary electron resonance discharge. Orig. art. has: 2 figures.

ASSOCIATION: Nauchno-Issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 26May64

NO REF SOV: 000

ENCL: 00

OTHER: 000

S UN CODE: NP

Card 3/3

FCIOV, VIKTORIN

Concerning: "Citrus Fruits", Gruzinskaya SSR

Soviet Source: P: "Vokrug Sueta", Moscow, 1947
Abstracted in USAF "Treasure Island" Report No.
19063; on file in Library of Congress, Air
Information Division.

PCPCV, VIKTORIN

Rioni River Region

" Draining of Marshes in Rioni River Region "

Soviet Source: P: Vokrug Sveta, July 1977, Moscow
Abstracted in USAF "Treasure Island" Report No.
15428, on file in library of Congress, Air
Information Division.

POPOV, Viktorin; LEVITINA, S.A., red.; PINKHASOV, Ya.V.

[Chardzhou-Kungrad; along the track with a notebook]
Chardzhou - Kungrad; s bloknotom po trasse. Tashkent,
Gos.izd-vo UzSSR, 1947. 29 p. (MIRA 16:8)
(Soviet Central Asia--Railroads--Location)

GULUBOV, Zh.: MISHEV, K., st. n. sutr.: POPOV, Vl.

Terraces in the basin of the Struma River between Kresnenska
Klisura and Rupel Pass. Izv Geog inst BAN 6:23-41 '62.

1. Chl.-kor. na Bulgarskata Akademiia na naukite i otg.
redaktor, "Izvestiia na Geografskia institut" (for Gulubov).
2. Chlen i sekretar na Redaktsionnata kolegia, "Izvestiia na
Geografskia institut" (for Mishev).

DULIN, I.L.; YES'FOV, P.T.; ANTONOV, N.V.; KANEV, A.I.; SOKOLOV,
V.P.; BUGRO, Z.N.; POPOV, V., red.

[The Pechora Coal Basin in the seven-year plan; a technical
and economic survey for 1958-1963] Pecherskii ugol'nyi bas-
sein - v semiletke; tekhniko-ekonomicheskii obzor za 1958-
1963 gg. Syktyvkar, Komi knizhnoe izd-vo, 1964. 92 p.
(MIRA 18:4)

POPOV, V.

Popov, V. "On a visit to the Deninites," [Combating the drought
in the Demin MTS kolkhozes, Novo-Annenskiy Rayon, Stalingrad
Oblast. Sketch 7, Illustrator, S. Byges, Vokrug svets, 1949,
No. 3, p. 17-20

SO: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 14, 1949).

POPOV, V., kand. ekonom. nauk; KHALIN, M.

She found her happiness in the Soviet Union. Nauka i
zhyttia 12 no.12:2-3 D '62. (MIRA 16:8)

POPOV, V.

Isolation of active viruses from tumors of viral origin non-
inoculable by filtrates. Izv. AN Latv.SSR no.9:83-90 '63.
(MIRA 16:12)

1. Institut mikrobiologii AN Latviyskoy SSR.

✱

POPOV, V.

Establishment. Sov. profsoiuzy 19 no.18:11 S '63. (MIRA 16:12)

1. Predsedatel' komiteta professional'nykh soyuzov Anninskogo
proizvodstvennogo kol'khozno-sovkhoznogo upravleniya, Voronezhskaya
obl.

POPOV, V.

Popov, V. - Nepriiateli po skladiranite zurneni khрани i borbata s tiakh. Sofiya, Zemizdat, 1951. 72 p. (Diseases and pests infesting stored grain, and how to combat them)

SO: Monthly List of East European Accessions, Library of Congress, Vol. 2, No. 9, Oct. 1953, Uncl.

POPOV, V., CHILINGARIAN, T., IVONINSKII, A.

"Aerial Forest Mensuration, a New Technique of Forest Management" Tr. from the Russian. p. 117, (POLANA, Vol. 9, no. 5, May 1953, Praha, Czechoslovakia).

SO: Monthly List of East European Accessions, LC, Vol. 2, No. 11, Nov. 1953, Uncl.

POPOV, V.

Fight errors in examinations by experts. Izobr.i rats. no.10:42-43
0'60. (MIRA 13:10)

1. Zamestitel' predsedatelya Komiteta po delam izobreteniy i
otkrytiy pri Sovete Ministrov SSSR.
(Technological innovations)

POPOV, V. (g.Serpukhov)

A simple **stroboscopic** tachometer. Radio no. 11:20-21 H '60.
(MIRA 14:1)

(Stroboscope) (Tachometer) (Telemetering)

POPOV, Vl.

Morphology of the cirque "Golemiia kazan" in the Pirin Mountains.
Izv Geog inst BAN 6:85-100 '62.

POPOV, V.

Honored innovator. Avt.dor. 28 no.11:3-4 N '65.

(MIRA 18:11)

1. Chlen Soyuzha zhurnalistov SSSR.

POPOV, V.A., zasluzhennyi vrach RSFSR

E.P. Marsakov on his 70th birthday. Vop. kur., fizioter. i lech.
fiz. kul't. 24 no. 4:372 J1-Ag '59. (MIRA 13:8)
(MARSAKOV, EVGENII PETROVICH, 1889-)

DENISOV, Viktor Grigor'yevich; LOPATIN, Rostislav Nikolayevich;
POPOV, V.A., polkovnik med. sluzhby, retsenzent; ODEROV, I.A.,
inzh., red.; BELYAYEVA, L.A., red. izd-va; FUKHLIKOVA, N.A.,
tekhn. red.

[Pilot and airplane] Letchik i samolet. Moskva, Gos. nauchno-
tekhn. izd-vo Oborongiz, 1962. 200 p. (MIRA 15:2)
(Airplanes—Piloting)

ACCESSION NR: AT4042709

S/0000/63/000/000/0408/0411

AUTHOR: Popov, V. A.; Pikovskiy, A. M.; Kiselev, Yu. V.; Krylov, Yu. V.

TITLE: Dual perception indicators for man-operated systems

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsonnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy konferentsii. Moscow, 1963, 408-411

TOPIC TAGS: visual indicator, dual perception indicator, semiautomatic control, human operator, auditory indicator, perception threshold, frequency differentiation

ABSTRACT: One of the chief problems in integrating the human operator into the control of semiautomatic systems lies in the area of more efficient transmission of information to the human operator. Most modern systems have only visual indicators. At the same time, it seems desirable to reinforce the visual indicator with an auditory one. The design of such indicator systems requires the knowledge of thresholds of sound differentiation based on frequency. It was found that simultaneous use of visual and auditory indicators increases perception by 6--11%

Card 1/2

L-20443-66 ENT(d)/FSS-2/ENT(1)/EEC(k)-2/EWA(d) SCTR AST/TT/DD/RD/GW
 SOURCE CODE: UR/0293/66/004/001/0137/0143

ACC NR: AP6007744

AUTHOR: Belyayev, P. I.; Leonov, A. A.; Popov, V. A.; Khachatur'yants, L. B.;
 Filosofov, V. K. 29
 B

ORG: none

TITLE: Some dynamic characteristics of the operator when tracking under Voskhod-2
 spaceflight conditions 12

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 1, 1966, 137-143

TOPIC TAGS: man machine factor, psychophysiology/Voskhod 2

ABSTRACT: The study was designed to determine the effects of the entire complex of physical and psychophysiological factors² of spaceflight on the Voskhod-2 crew. Four situations were considered: 1) Training under normal conditions; 2) activity in a spacecraft mockup; 3) activity on the launch date; 4) activity during the actual spaceflight. The reaction of Belyayev and Leonov to visual tracking regimens of various frequencies was monitored and the data was statistically processed by a computer. The mode of recording tracking activity is shown in Fig. 1. Using this system, it was possible to study the following operator characteristics: 1) the amplitude-frequency characteristic; 2) phase-frequency characteristic; 3) auto-correlation function; 4) cross-correlation function; 5) transition function and some other characteristics. The studies showed that the dynamic characteristics of

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UDC: 629.198.61

Card

2/2 BK

Рогов, В.П.

SOV/2156

PHASE I BOOK EXPLOITATION

28(1)

Soveshchaniye po kompleksoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy. Sovetskoye inzhenerstvo, tom. 1. Goryachaya obrabotka metallya (Automatization of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Processes, Vol. 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Sponsoring Agency: Akademiyu nauk SSSR. Institut mashinovedeniya. Koalitsiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dinnihin. Academician. Compiler: V.M. Raskatov; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: I.P. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. 1, contains articles under the general title, 'Hot Working of Metals'. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: P.N. Alexeev, D.P. Ivanov and G.M. Orlov; P.N. Alexeev, A.D. Tolstov and V.T. Meshcherin; V.T. Meshcherin, B.I. Frolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

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Card 6/8

CHESNOKOV, B.V.; POPOV, V.A.

Growth of quartz grains in the eclogites of the Southern Urals. Dokl.
AN SSSR 162 no.4:909-910 Je '65. (MIRA 18:5)

1. Sverdlovskiy gornyy institut im. V.V.Vakhrusheva. Submitted
January 16, 1965.

POPOV, V.A., otv. red.

[Natural resources of the Volga-Kama territory; the animal kingdom] Prirodnye resursy Volzhsko-Kamskogo kraia; zhivotnyi mir. Moskva, Izd-vo "Nauka." 1964. 194 p.
(MIRA 17:7)

1. Akademiya nauk SSSR. Kazanskiy filial. Biologicheskii institut. 2. Zavetudyushchiy laboratoriyey zoologii Biologicheskogo instituta Kazanskogo filiala AN SSSR.

SUDAKOV, S.G.; VIROVETS, A.M.; KURYTSIN, S.V.; PAVLOV, V.F.; PODOBEDOV, N.S.;
POPOV, V.A.; RYTOV, A.V.; SOKOLOVA, N.A.; SOKOLOV, M.N.; TROITSKIY,
B.V.; SHNEIDERMAN, E.S.

[Instructions for topographical surveying; scale 1:5000 and 1:2000]
Instruktsiia po topograficheskoi s'emke v masshtabakh 1:5000 i 1:2000.
Moskva, Izd-vo geodezicheskoi lit-ry, 1955. 87 p. [Microfilm]
(MLRA 8:2)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodezii i karto-
grafii.
(Topographical surveying)

BELYAYEV, Sergey Vasil'yevich; ZABOYEVA, Iya Vasil'yevna; POPOV,
Vyacheslav Aleksandrovich; RUETSOV, Dmitriy Mikhaylovich;
IVANOVA, Ye.N., doktor sel'khoz. nauk, prof., osv. red.

[Soils of the Pechora Industrial Region] Pochvy Pechorskogo
promyshlennogo raiona. [By] S.V. Beliaev i dr. Moskva,
Nauka, 1965. 110 p. (MIRA 18:3)

POPOV,

AUTHOR:
V.A.

Panovko, V. M., Engineer

TITLE:

All-Union Conference on the hardfacing of dies for hot and cold press-forming

PERIODICAL: Svarochnoye proizvodstvo, no. 3, 1963, 44 - 45

TEXT: The First All-Union Scientific-Technical Conference on hardfacing of dies was held at Volgograd from November 27 - 29, 1962. The Conference heard the following reports: N. T. Prosvirov (VNIPTMASH) on "Operational conditions and the type of forging dies"; L. A. Pozdnyakova (ENIKMASH) on "Problems of the durability of dies and press-forming steels"; V. A. Popov, ENIKMASH, on some structural peculiarities of carbide tools for cold extrusion and upsetting; I. I. Frumin, B. V. Danil'chenko (Institute of Electric Welding imeni Ye. O. Paton) on "Electric-slag hardfacing of some dies"; L. Kolomiets (IES imeni Ye. O. Paton) on "Reconditioning of dies by electric-slag hardfacing"; V. A. Timchenko (IES imeni Ye. O. Paton) on "A machine with program control for automatic hardfacing of forging dies"; Reports on manual arc-hardfacing of dies were delivered by N. V. Popov (Volgograd Tractor Plant), V. M. Panovko and Ye. G. Bloshkin (Moscow Experimental Welding Plant); O. D. Superko (Chelyabinsk Tractor Plant), N. I. Nikolko (Ural Heavy Machinebuilding Plant), P. M. Sapov ("Rostsel-mash"), N. I. Kuzovkova (GAZ), Yu. P. Zaytsev (ENIKMASH), V. I. Il'in (ZIL), Gopovin (Khar'kov "Svet shakhtera" Plant), and others. In a decision the Conference mentioned deficiencies connected with the subject, i.e. lack of unified electrodes; of centralized production; of unified technological instructions on the hardfacing of dies; of methods for evaluating the quality of hardfaced metal, and lack of high-quality electrodes for hardfacing cast-iron dies. The Conference decided to take steps in order to eliminate the aforementioned deficiencies.

L 25502-66 EPF(n)-2/EWT(1)/ETC(f)/ENG(m) IJP(c) AT

ACC NR: AP6011391

SOURCE CODE: UR/0057/66/036/003/0466/C469

AUTHOR: Kurilko, V.I.; Popov, V.A.

ORG: Khar'kov State University im. A.M. Gor'kiy (Khar'kovskiy gosudarstvennyy universitet)

TITLE: On the kinetic theory of excitation of longitudinal waves in a bounded plasma

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 3, 1960, 466-469

TOPIC TAGS: plasma wave, plasma oscillation, longitudinal wave, kinetic equation, electron reflection

ABSTRACT: The authors employ the kinetic equation for small deviations of the electron distribution function from the Maxwellian form to discuss excitation in a plasma with a plane boundary of longitudinal waves by an oscillating electric field perpendicular to the boundary. As the boundary condition it is assumed that the fraction p of the plasma electrons that strike the boundary are specularly reflected and the fraction $1 - p$ of them are diffusely reflected. From the kinetic equation and this boundary condition there is derived an integral equation for the field. For the case $p = 1$ this integral equation was derived and its solution discussed by L.D. Landau (ZhETF, 16, 574, 1947); in the present paper the integral equation is treated for general values of p with the aid of techniques described elsewhere by

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UDC: 533.9

L 25502-66

ACC NR: AP6011391

V.I.Kurilko and V.I.Miroshnichenko (Ukr.fiz.zh. 6, No. 4, 1961); ZhTF, 33, 803, 1963). For the case $p = 0$ the calculations are carried through to the end and expressions are derived for the distribution of the field near the plasma boundary. It is found that in this case there is formed a surface charge at the plasma boundary, as a result of which the field distribution for frequencies near the plasma frequency is significantly different from the distribution obtained by Landau (loc.cit.) for the case $p = 1$. Orig. art. has: 14 formulas.

SUB CODE: 20

SUBM DATE: 10Mar65

ORIG. REF: 010

Card 2/2

L 31177-66 EWT(1)/T IJP(c) GG/AT

ACC NR: AP6006832

SOURCE CODE: UR/0181/66/008/002/0467/0474

AUTHOR: Popov, V. A.

ORG: Physicotechnical Institute of Low Temperatures AN UkrSSR, Kharkov (Fiziko-tehnicheskii institut nizkikh temperatur AN UkrSSR)

TITLE: Equivalent Hamiltonian and energy of strongly bound p-electrons in a dielectric crystal

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 467-474

TOPIC TAGS: crystal theory, Hamiltonian, dielectric crystal, constant magnetic field, external magnetic field, homogeneous magnetic field, orbit momentum, quantum number

ABSTRACT: The author derives an approximate Hamiltonian which theoretically describes spin and orbital excitations of electrons in a dielectric crystal, and specifically accounts for conservation of orbital momentum during excitation of an electron. A system of N atoms is considered with a single "valence" p -electron per atom. The Hamiltonian contains terms which account for the energy of the system in

Card 1/2

ACCESSION NR: AP4039638

S/0181/64/006/006/1579/1588

AUTHORS: Zarochev, Ye. V.; Popov, V. A.

TITLE: Ground states of biaxial antiferromagnetic material

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1579-1588

TOPIC TAGS: antiferromagnetic material, antiferromagnetism, anisotropic medium, magnetisation, magnetic property

ABSTRACT: The ground states of a biaxial antiferromagnetic dielectric are found and compared with the ground states in the uniaxial case. The phenomenological Hamiltonian is written for a biaxial antiferromagnetic, a system of magnetic atoms which is divided into two magnetic sublattices. From this the ground state energy density is given by

$$E_0 = \delta(M_{10} M_{20}) + \frac{1}{2} \beta (M_{10}^2 + M_{20}^2) + \beta_1 M_{10} M_{20} + \frac{1}{2} \rho (M_{10}^2 + M_{20}^2) + \rho_1 M_{10} M_{20} - (M_{10} + M_{20} H),$$

where M_{10} is the magnetisation of the 1-th sublattice in the ground state, δ is

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ACCESSION NR: AP4039638

the constant of the exchange interaction between sublattices, $\beta, \beta_{10}, \beta_{20}$ are constants of the magnetic anisotropy, and H is the constant uniform external magnetic field. Minimizing E_0 as a function of the orientation of M_{10} leads to the determination of the antiferromagnetic ground states as a function of the magnetic field H and of the properties of the crystal magnetic anisotropy. For $H = 0$ there are three types of antiferromagnetics; A^S, A^X and A^Y for which

$$\beta - \beta_{10} > 0, \beta - \beta_{20} > 0,$$

$$\beta - \beta_{10} < 0, \beta - \beta_{20} < \beta - \beta_{10},$$

and

$$\beta - \beta_{10} < 0, \beta - \beta_{20} < \beta - \beta_{10},$$

respectively. In the ground state M_{10} and M_{20} are antiparallel and directed along the $Oz, Ox,$ and Oy axes (edges $c, a,$ and b of the rhombic magnetic cell) respectively. For $H \neq 0$ each of the three types can be subdivided into 10 cases which

Card 2/3

ACCESSION NR: APL039638

are discussed in detail. The authors thank A. I. Akhiezer and V. G. Bar'yakhtar for discussion of the results and valuable advice. Orig. art. has: 50 equations, 33 diagrams, and 3 tables.

ASSOCIATION: Fiziko-tehnicheskiy institut nizkikh temperatur, Kharkhov Gosuniversitet, Rostov-na-Donu (Physicotechnical Institute of Low-Temperature, Kharkov State University)

SUBMITTED: 08Oct63

DATE ACQ: 19Jun64

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 003

OTHER: 001

Card 3/3

ACCESSION NR: AP4043376

S/0181/64/006/008/2489/2494

AUTHORS: Zarochentsev, Ye. V.; Popov, V. A.

TITLE: Energy spectra and resonant frequencies of biaxial anti-ferromagnet

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2489-2494

TOPIC TAGS: antiferromagnetism, spin wave theory, magnetic anisotropy, energy distribution, resonant state, copper compound

ABSTRACT: The authors have shown earlier (FTT, v. 6, 1579, 1964) that antiferromagnets with biaxial magnetic anisotropy exist and include $\text{CuCl}_2 \cdot 2\text{A}_2\text{O}$ and CuS_4 . In the present article they calculate the energy spectrum of the elementary spin excitations (spin waves) of such an antiferromagnet using the phenomenological theory of spin waves, which is applicable to spin-system states close to the ground

Cord 1/2

ZAROCHENTSEV, Ye.V.; POPOV, V.A.

Ground states of a biaxial antiferromagnetic. Fiz. tverd. tela
6 no.6:1579-1588 Je '64. (ISSN 1749)

1. Fiziko-tehnicheskii institut nizkikh temperatur, Khar'kov i
Gosudarstvennyi universitet, Rostov-na-Donu.

ZAROCHEMENTSEV, Ye.V. [Zarochentsev, IE.V.]; POPOV, V.A. [Popov, V.O.]

Energy spectra and resonance frequencies of biaxial antiferromagnets. Ukr. fiz. zhur. 10 no.4:368-381 Ap '65. (MIRA 18:5)

1. Fiziko-tekhnicheskii institut nizkikh temperatur AN UkrSSR, Khar'kov.

L 26418-56 EWT(d)/EWP(1) IJP(c) GS/BS

ACC NR: AM5017155

Monograph

48 UR/

6-1

Ushakov, V. B.; Petrov, G. M.; Bazy, Ye. P.; Popov, V. A.; Lukin, N. B.; Moskalenko, G. V.; Sabayev, G. N.

The MN-14¹⁶ electronic nonlinear analog computer (Elektronnaya nelineynaya analogovaya vychislitel'naya mashina MN-14) Moscow, Izd-vo "Mashinostroyeniye," 1965. 232 p. illus., biblio. 3300 copies printed.

TOPIC TAGS: analog computer, analog computer system, computer control system, computer component/MN-14 analog computer

PURPOSE AND COVERAGE: This book is intended for engineers, technicians, and scientists concerned with the problems of development and practical application of analog computers. It may also be useful to students in this field at schools of higher education. The MN-14 nonlinear electronic analog computer, developed at the Scientific Research Institute of Computer Machine Building, is described. It is used to model dynamic systems described by common nonlinear differential equations up to the 30th order with a large number of nonlinear relationships. The MN-14 computer may also be used to solve engineering construction problems as well as for scientific investigations in various fields of the national economy. The principles of the computer's design and its circuit characteristics are discussed. Basic units and structural assemblies are described and the methods used in the preparation of the problems solved by the computer are covered. Considerable attention is paid to the problems of increasing the computer's practical application by means of introduction of additional equipment into its system. The names of

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UDC: 681.142.33

L 26418-66

ACC NR: AM5017155

Ushakov V. B., Doctor of Technical Sciences, and G. M. Petrov are listed as the leaders.

TABLE OF CONTENTS [abridged]:

Introduction -- 3

Ch. I. Basic Units of the Computer -- 18

Ch. II. D-c Amplifiers and Power Supply Sources for the Computer -- 61

Ch. III. Computer Control and Adjustment System -- 84

Ch. IV. Equipment Increasing; Computer Potentialities -- 108

Ch. V. Structural Characteristics of the Computer and its Basic Components -- 154

Ch. VI. Solution of Problems by Means of the Computer and its Operation -- 165

Ch. VIII. Possibilities of Further Computer Development -- 219

Bibliography -- 234

SUB CODE: 09/ SUBM DATE: 12Feb65/ ORIG REF: 010/ OTH REF: 001/
Cord 2/2 1.0

L 3774-66 EWT(m) DIAAP GS

S/0000/64/000/000/0788/0790

ACCESSION NR: AT5007949

AUTHOR: Vagin, V. A.; Veksler, V. I.; Zubarev, V. M.; Kuznetsov, A. B.; Mukhin, S. Y.; Petukhov, V. A.; Ponomov, V. A.; Rubin, N. B.; Stepanyuk, V. L.; Chekhlov, K. V.; Semenyushkin, I. N.

TITLE: Electrodynamic separator of antiprotons with 5 GeV/c momentum

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 788-790

TOPIC TAGS: high energy particle, antiproton, pion, particle interaction

ABSTRACT: The study of processes initiated by such particles as high-energy K-mesons and antiprotons is often determined by the possibility of separating these particles from an accompanying pi-meson background. The tremendous technical difficulties arising in the use of the electrostatic method of separation for obtaining pure beams of relativistic particles urgently dictate the necessity of seeking new means of separating particles. In 1956, V. I. Veksler and V. A. Petukhov proposed an electrodynamic method of separating particles according to masses. At the present time the high-energy laboratory of the Joint Institute of Nuclear Research is perfecting the application of an electrodynamic separator, creat-

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L 3774-66

ACCESSION NR: AT5007949

ed on the basis of this method, of antiprotons with momentum up to 5 GeV/c. The present report discusses the principle governing the operation of the electrodynamic separator. At the end of the acceleration cycle in the synchrophasotron the protons are recaptured into the acceleration regime at a frequency of high multiplicity and are subsequently directed against a target. The beam of secondary particles which then occurs possesses a corresponding high-frequency structure. The negatively charged particles that interest us are extracted by the magnetic field of the accelerator to the outside. Further, as a result of magnetic analysis the particles are resolved in a narrow interval of momenta, or pulses. A longitudinal distribution of the resolved particles begins to take place over a certain distance of their flight. The antiprotons being heavier particles retire from the pi-mesons. If the total length L of flight, counted from the target (for the case of relativistic particles) is equal to

$$L = \frac{\lambda}{2(\beta_1 - \beta_2)},$$

where λ is the operating wavelength of a multiple-acceleration system and β_1 , β_2 are respectively the velocities of the pi-mesons and antiprotons in units of the speed of light, then the lag of the antiprotons is exactly equal to the half wavelength $\lambda/2$. On the path of the particles at this place there is created a high-frequency transverse electric field with the same wavelength λ which is rigidly bound in

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ACCESSION NR: AT5007949

phase with the voltage that is accelerating the beam at multiple frequency. In case of a suitable choice of the phase of the electric field the antiprotons and the pi-mesons will obtain angular deflections different in sign and can be spatially resolved further. The report discusses the composition of the electrodynamic separator of antiprotons at the high-energy laboratory, which consists of a multiple-acceleration system, deflecting device, and an ion-optical system. Also discussed are the separator's characteristics. The device can also be employed to resolve pi-mesons and antiprotons with smaller values of momenta and to separate K-mesons, if certain necessary conditions are fulfilled for the separation of antiprotons and K-mesons respectively:

$$(pc)_p \sim m_p c^2 \left[\frac{L}{(2n+1)\lambda} \right]^{1/2}; \quad (pc)_K \sim m_K c^2 \left[\frac{L}{(2n+3)\lambda} \right]^{1/2}$$

where the momenta of the antiprotons and K-mesons are respectively $(pc)_p$, $(pc)_K$, and the rest-energy of an antiproton is $m_p c^2$, and $n = 0, 1, 2, \dots$ Orig. art. has 3 figures.

Card 3/4

L 3774-66

ACCESSION NR: AT500794S

ASSOCIATION: Ob"yedinennyi institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research)

SUBMITTED: 26May64

ENCL: 00

SUB CODE: NP

NO REF SOV: 003

OTHER: 000

Card 4/4

POPCV, V. A.

M. Ya. Borodin, Z. I. Kazakova, A. P. Koroleva and V. A. Popov, "The Thermo-resistant and Durable Foamy Materials based on Silicon-organic Resin."

Report presented at the Second All-Union Conference on the Chemistry and Practical Application of Silicon-Organic Compounds held in Leningrad from 25-27 September 1958.
Zhurnal prikladnoy khimii, 1959, Nr 1, pp 238-240 (USSR)

KOLOMEYTSEVA, M.B.; LYCHKINA, G.P.; POPOV, V.A.

Study of an automatic control system with a thermal component. Trudy MEI no.49:17-28 '63. (MIRA 17:3)

MISHEV, K., st. n. sutr.: POPOV, Vl.: MIKHAILOV, Tsv.

Morphology and neotectonics of the foot of the Balkan Mountains
between the mountain ridges of Gylubets and Koznitsa. *Izv*
Geog inst BAN 6:43-62 '62.

1. Chlen i sekretar na Redaktsionnata kolegiia, "Izvestiia na
Geografskia institut" (for Mishev).

POPOV, V.A.; APANASENKO, B.G.; GORYACHEV, I.A.

Providing emergency surgical care in remote areas of the Arctic.
Voen-med. zhur. no.7:84 J1 '61. (MIRA 15:1)
(ARCTIC REGIONS---SURGERY)

USSR/Diseases of Farm Animals. Diseases Caused by
Bacteria and Fungi.

R-1

Abs Jour: Ref Zhur-Biol., No 18, 1958, 83520

Author : Ivanov, M. M., Popov, V. A.

Inst : State Scientific Control Institute of Veterinary
Preparations.

Title : Cattle Immunization in Brucellosis Isolators with
Strain No 19 Vaccine.

Orig Pub: Tr. Gos. nauchno-kontrol'n. in-ta vet. preparatov,
1957, 7, 51-53.

Abstract: No abstract is given

Card 1/1

Popov, V.A.

"Numerosity of Mustela Erminea Pall. as Affected by Skrjabinogylus Invasion,"

Dok. AM, 39, No. 4, 1943. c1943-.

POPOV, V.A.; MIRONOV, N.F.

Materials on the ecology of the field mouse *Apodemus flavicollis*
Melch. Izv. Kazan. fil. AN SSSR. Ser. biol. i sel'khoz. nauk no. 1: 167-189
'49. (MLRA 10:2)

(Tatar U.S.S.R.--Field mice)

POPOV, V.A.; VORONOV, N.P.; KULAYEVA, T.M.

Studies of the ecology of shrews (Soricidae) of the Raifa Forest
(Tatar A.S.S.R.). Izv.Kazan.fil.AN SSSR.Ser.biol.i sel'khoz.nauk
no.2:173-208 '50. (MLRA 10:2)
(Raifa region--Shrews)

ACCESSION NR: AP4039950

8/0191/04/000/006/0052/0053

AUTHOR: Popov, V. A.; Druyan, I. S.; Varshal, B. G.

TITLE: Investigation by thermal analysis of the processes occurring during heating of polymers.

SOURCE: Plasticheskiye massy*, no. 6, 1964, 52-53

TOPIC TAGS: thermal analysis, polymer thermal degradation, polymer degradation process, SKN 40 rubber, nitrile rubber, nitrile rubber sulfur composition, nitrile rubber novolac composition, thermogram, viscoelastic state, fluid flow, thermal oxidation, combustion

ABSTRACT: SKN-40 rubber, alone or milled with 3% sulfur, and a composition comprising 40 parts by weight of the nitrile rubber plus 100 parts of novolac resin were subjected to thermal analysis. A comparison of the thermograms for SKN-40 heated at 20 and at 100C/min. showed the characteristics were essentially the same, but the features were much sharper at the slower heating rate. An initial endothermic effect at 60-220C is attributed to the increase in the mobility of the rubber and transition from viscoelastic to fluid state. Rearrangement of the

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1/4

ACCESSION NR: AP4039950

SUB CODE: MT, OC

NO REF SOV: 003

OTHER: 001

Card 3/4

ACCESSION NR: AP4041781

S/0191/64/000/007/0033/0036

AUTHOR: Popov, V. A., Kuperman, M. Ye., Krasil'nikova, Z. V.

TITLE: Electron microscopic investigation of phenol-rubber compositions and their initial components

SOURCE: Plasticheskiye massy*, no. 7, 1964, 33-36

TOPIC TAGS: phenol-rubber product, electron microscopy, elastomer, foam plastic, rubber SKN-40, nitrile rubber, phenol formaldehyde resin, copolymerization, copolymer structure

ABSTRACT: Electron microscopic investigations of the surface structure of the copolymerization products of phenol-formaldehyde resin and nitrile rubber SKN-40 with an EM-5 electron microscope having a resolution of 20A showed a definite correlation between the changes in surface structure and the quantitative ratios of the initial components as a function of the conditions of thermal treatment. At certain ratios of components, the foam plastic resulting from their copolymerization had a homogeneous surface structure, indicating their uniform mutual distribution. An increasing amount of elastomer led to a composition with a loose surface structure, which in turn decreased the capacity to form foam

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1/2

ACCESSION NR: AP4041781

plastics. The surface structure of the copolymerization products was found to depend greatly on the molding temperature. This is obviously due to chemical transformations of the initial components resulting from the mechanical-chemical processes during their mixing while being heated. In contrast to current concepts of elastomers and systems consisting of entangled molecular chains, it was found that they consist of randomly arranged bands. The band width of nitrile rubber SKN-40 is 900-1000 Å. Orig. art. has: 16 electron micrographs and 1 table.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MT

NO REF SOV: 012

OTHER: 007

Card

2/2

POPOV, V.A.

Results of studying and rebuilding the terrestrial vertebrate fauna
of the Tatar A.S.S.R. during the past thirty years. Izv.Kazan.fil.
AN SSSR.Ser.biol.i sel'khoz.nauk no.3:183-206 '52. (MLBA 10:2)
(Tatar A.S.S.R.-- Zoology, Economic)

11/11/52
GRIGOR'YEV, N.D.; POPOV, V.A.

Method for determining the age of the arctic fox (*Vulpes lagopus* L.).
Izv.Kazan.fil.AN SSSR.Ser.biol.i sel'khoz.nauk no.3:207-215 no.3:207-
215 '52. (Arctic fox) (MLRA 10:2)

POPOV, V.A.

Course of peptic ulcer under Arctic conditions. Klin.med.
38 no.11:122-126 N '60. (MIRA 13:12)
(PEPTIC ULCER) (COLD—PHYSIOLOGICAL EFFECT)

POPOV, V. A. , *OPANASENKO, V. G. and GORYACHEV, I. A.*

"The Rendering of Emergency Surgical Aid in Remote Places of the Arctic."

Voyenna-Meditsinskiv Zhurnal, No. ⁷~~12~~, December 1961, pp 62-73

POPOV, V.A.; OBYEDKOV, G.G. (Leningrad)

Content of vitamin C in the blood of healthy subjects and
some surgical patients in the Arctic. Vop. pit. 21 no.6:
60-62 N-D '62. (MIR 17:5)

POPOV, V.A.

Results of the first year's work and basic tasks in utilizing
terrestrial vertebrates in the bed of the future Kuybyshev
Reservoir. Uch.zap.Kaz.un.113 no.1:203-211 '53. (MIRA 10:3)
(Volga Valley--Vertebrates)

POPOV, V.A.: POPOV, Yu.K.; PRIYEZZHEV, G.P.; KULAYEVA, T.M.; VORONOV, N.P.;
GARANIN, V.I.; NAZAROVA, I.V.; IZOTOVA, T.Ye.; KRASOVSKAYA, L.A.

Results of studying the animal kingdom in the flood zone of the
Kuybyshev Hydroelectric Power Station. Trudy Kazan. fil. AN SSSR.
Ser. biol. nauk no.3:7-217 '54 (MLRA 10:5)
(KUYBYSHEV RESERVOIR REGION--ZOOLOGY)
(WILD LIFE, CONSERVATION OF)

POPOV, V.A.; NOVIKOV, G.A., prof., otv.red.

[Mammals of the Volga-Kama area; insectivores, chiropterans,
rodents] Mlekopitaiushchie Volzhsko-Kamskogo kraia; nase-
komiadnye, rukokrylye, grysuny. Kazan', Akad.nauk SSSR,
Kazanskii filial, 1960. 467 p. (MIRA 14:12)
(Kama Valley--Mammals)
(Volga Valley--Mammals)

PCPOV, V. A.

Defended his Candidates dissertation in the Physics Faculty of Moscow State University on 7 April 1952.

Dissertation: "Study of the Transition of Normal Combustion to Detonation in Tubes."

SO: Vestnik Moskovskogo Universiteta, Seriya Fiziko-Matematicheskikh i Yestestvennykh Nauk, No. 1, Moscow, Feb 1953, pp 151-157: transl. in W-29782, 12 April 54, For off. use only.

POPOV, V. A.

Index
Aeronautics
March 1954
Heat,
Thermodynamics

8/103 536.461
Certain Regularities of Pre-
detonation Phase of Flame
Propagation

V.A. Popov

Izv. Akad. Nauk. Otd. Tekh.
Nauk

10,1428-1439

1953

U.S.S.R.

An attempt is made, without delving into the mechanism of the pre-detonation phase, to obtain certain regularities accompanying the propagation of flame prior to the formation of a detonation wave. The theoretical part is based on the method of characteristics for the problem of one-dimensional unsteady motion. Calculations are given for stoichiometric mixtures of hydrogen and oxygen, and for that of carbon oxide and oxygen, and relevant photographs appended. Experimental data and theoretical conclusions tally well, the nature of flame vibrations is explained by an interaction of the forming shock wave - caused by flame propagation in its initial stage - and the flame front. (Sibl.5)

POPOV, V. A.

The question of the nature of the vibrational phase of
diffusion flames. V. A. Popov, Doklady Akad. Nauk
S.S.S.R. 91, 306-7 (1969). The vibrations of flame veloci-
ties often encountered in diffusion flames are explained in
terms of the resonance vibration of the 2 columns of burned
and unburned gas. When gas is burned, the products of com-
bustion have a velocity in a direction opposite to that of the
flame front. The vibration can be considered analogous to
that of 2 connected strings vibrating longitudinally and
having different Young's moduli. The equation derived is
 $\sin kx - A \sin (k - 2)x = 0$, where $A = (C_1 - C_2) /$
 $(C_1 + C_2)$, C_1 and C_2 are the velocities of sound in the un-
burned and burned gases, resp., $x = 2\pi t / 2T$, where l_1 is the
length of tube behind the flame front, l_2 is the length in front
of the flame front, T is the period of vibration of the
whole column of gas, and $k = [C_1 l_1 / C_2 l_2] - 1$. The calcul-
is for a tube closed at both ends, and the effect of cooling of
the burned gas is neglected. The frequency of vibration as
a function of l_1/l_2 is calc'd. by the above equation for the
CO-O₂ flame. The data used were $C_1 = 1072$ m./sec.,
 $C_2 = 328$ m./sec., and $l_1 + l_2 = 910$ mm. The temp. of
the burned gas was taken from tables. The curve so ob-
tained is in qual. agreement with the exptl. data. The
differences were attributed to the assumptions made.

Joseph B. Levy

9/1/55
 JW

Kryzhebnovskiy Energetics Inst, #5 USSR

POPOV, V. A.

MIKRYUKOV, Vasilii Yemel'yanovich; MLODZEYEVSKIY, A.B., professor, redaktor;
POPOV, V.A., redaktor; MULIN, Ye.V., tekhnicheskiiy redaktor.

[Course in thermodynamics] Kurs termodinamiki. Pod. red. A.B. Mlod-
zeevskogo. [Moskva] Izd-vo Moskovskogo univ-ta, 1955. 247 p.
[Microfilm] (MLRA 8:5)
(Thermodynamics)

POPOV, V. A. Cand. Phys.Math. Sci.

"Method of Measuring the Temperature of Burning Fuel Particles When in Motion,"
a paper presented at the 6th International Conference on Combustion, New Haven,
19-24 August 1956

Inst. of Energetics, AS USSR

A-52806, 9 July 56 and B-99575, 4 Sep 56
Abstract of paper E-4519 in Branch #5

POPOV, V. A.

0000

Photopyrometric temperature determinations of moving hot particles. V. A. Popov. *Izv. Akad. Nauk SSSR, Ser. Tekh. Nauk* 1956, No. 1, pp. 1-7. The method of photographic pyrometry used for the temp. detn. of moving hot particles is based on methods already described (e.g., D. W. Matz, *Rev. Sci. Instr.* 22, 769 (1951); cf. Londerer, *Ch. 49, 4339i*), and is modified by substituting a film moving at some predetd. speed for the stationary photographic film. The method, its evaluation, and the accuracy to be achieved are discussed in detail. The temp. was measured of freely falling spherical C particles, 4.5 mm. in diam., heated in N_2 to 700° and dropping into an oxidizing atm. in a transparent vertical tube 1500 mm. long. The particle temp. rose from 350 to 930° , in good agreement with physicochem. calcs. W. M. Sternberg

①

RDW/ak

POPOV, V. A.

✓ The initial propagation length of flames in closed tubes.
V. A. Popov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1930, No. 3, 116-25. — The initial propagation length is the distance the flames progress from the closed end of the tube before the motion becomes retarded. The first retardation occurs at the moment when the flame occupies the complete cross-section of the tube and heat exchange sets in between the combustion products and the tube walls. The moment when the flame first fills the whole cross-section depends very little on the tube length, and is a function of the tube diam. and the concn. of the combustible mixt. The initial propagation length is detd. by the velocity of the normal fresh gas, the expansion of the combustion products, and the compa. of the combustible like the normal dependence of the velocity on the concn. of the mixt. The return flow of gas is detd. by the intensity of heat exchange: An increase in the flame front increases the area of contact of the flame-front with the tube walls, and results in an increased heat exchange.

W. M. Sternberg

SP LFM

ПОПОВ, В. А.

CHIZHOV, D.G.; KOGTEV, G.I.; LAVRENNENKO, K.D.; SPIRIN, S.A.; NEKRASOV, A.M.; IVANOV, M.I.; UFAYEV, M.Ya.; GRISHIN, I.K.; KOSTIN, M.F.; ПОПОВ, В. А.; ZAGORODNIKOV, P.I.; FEDOTOV, P.N.; KAZ'MIN, A.V.; FOMICHEV, G.I.; YERSHOW, P.I.; MESHCHERYAKOV, V.I.; YEFREMOV, S.G.; LEVIN, I.S.; LETUCHEV, L.I.; KOKOROV, S.V.

Nikolai Alekseevich Andreev. *Energetik* 4 no.9:40 S '56. (MLRA 9:10)
(Andreev, Nikolai Alekseevich, 1896-1956)

POPOV, V.A.
KHITRIN, Lev Nikolayevich; POPOV, V.A., redaktor; MEZ'YER, V.V., tekhnicheskii redaktor

[Combustion and explosion physics] Fizika gorenii i vzryva. [Moskva]
Izd-vo Mosk. univ., 1957. 442 p. (MLBA 10:4)
(Combustion) (Explosions)

POPOV, V. A., AS USSR, Moscow

"Some Factors on the Pre-explosive Propagation of the Flame in Gaseous Mixtures," a paper submitted at the 16th International Congress of Pure and Applied Chemistry, Paris, 18-24 July 1957.

POPOV, V. N.

✓

5262. KINETICS OF GAS EVOLUTION BY COAL IN CONNECTION WITH THE PROBLEM
OF METAMORPHISM. Byuller, R. L. and Popov, V. N. (Zh. prikl. Khim. (J. appl.
Chem., Moscow), 1957, vol. 30, (2), 271-277).

POPCV, V. A.,

"Measuring the Temperature of Burning Fuel Particles in Motion." (Study of Combustion Processes; Collection of Articles on Work, Done by the Power Institute imeni G. M. Krzhizhanovskogo AS USSR) Moscow Izd-vo AN SSSR, 1958. 123 p.

(Laboratory for the Intensification of Furnace Processes).

for abstract see Khitrin, L. N.

POPOV, V. A.

(Institute of Energetics, USSR Academy of Sciences, Moscow.)

"On the Subdetonation Period of Flame Propagation"

paper submitted at the Seventh Intl. Symposium on Combustion - London and Oxford, England, 28 Aug - 3 Sep '58.

C - 3,800,830, 25 July 1958

AUTHORS: Basov, V.N. and Popov, V.A. (Moscow) SOV/24-58-8-2/37

TITLE: On the Coefficient of Resistance to the Movement of
Burning Particles (O koeffitsiyente soprotivleniya
dvizheniyu goryashchikh chastits)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
Nauk, 1958, Nr 8, pp 12 - 14 (USSR)

ABSTRACT: In this paper, a comparative, experimental analysis is made of the resistance coefficients of burning and non-burning carbon particles of spherical shape. The aim of the experiments was to measure directly the frontal resistance of such particles and to elucidate the dependence of the resistance coefficient on the Reynolds number. The experimental data relate to the range of the steady-state, hydrodynamic conditions as well as to the non-steady-state ones. The latter usually takes place in the combustion of solid fuel in a variety of heating devices. The test rig, Figure 1, included pendulum scales consisting of a thin, quartz rod, suspended horizontally on threads of a length of 287 cm; at one end of the rod, a spherical particle was placed onto which an oxidising atmosphere

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On the Coefficient of Resistance to the Movement of Burning Particles

means of a rheometer. The force acting on the particle was determined from the deflection from the equilibrium position. The spherical carbon particles were pressed from a mixture of coal and 15% peat tar and, following that, were heated to 900 °C without access of air. The experiments with the hot particles were preceded by burning particles in a muffle furnace to 900 °C. The diameter of the test tube was 42 mm; the particle diameter was 15.5 mm. The tests were limited to a time during which the particle diameter differed little from the initial value. Experimental data graphed in Figure 2 show that the dependence of the resistance coefficient of the burning particle on the Reynolds number is fully analogous to the dependence of the non-burning particle (within the limits of the experimental accuracy, equalling 8.5%). The motion of particles of other sizes was also investigated. The following conclusions are arrived at: the dependence of the resistance coefficient on the Reynolds number of a burning particle fixed in the flow does not differ from the respective dependence of a non-burning particle; the change in the temperature of the surface of a burning particle between

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900 and 1 250 °C does not influence the resistance coefficient; study of the movement of the burning and non-burning, spherical particles with diameters between 2.4 and 4.5 mm did not reveal any difference in their movements and therefore did not confirm the conclusions propounded by Leont'yev (Ref 1) on the increase of the resistance coefficient of burning particles. There are 5 figures and 1 Soviet reference.

SUBMITTED: December 16, 1957

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| 1. Particles--Motion | 2. Particles--Testing equipment |
| 3. Carbon--Combustion | 4. Carbon--Temperature factors |

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SOV/24-58-12-14/27

AUTHOR: Popov, V.A. (Moscow)

TITLE: Development of the Combustion Process of Moving Particles in Non-Stationary Hydrodynamic and Thermal Conditions (Razvitiye protsessa goreniya dvizhushchikhsya chastits v nestatsionarnykh gidrodinamicheskikh i teplovykh usloviyakh)

PERIODICAL: Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 12, pp 90-95 (USSR)

ABSTRACT: Continuation of earlier work (Ref.1-2). The author first describes experiments in which the oxidation of spherical carbon particles by oxygen (74%) - nitrogen (26%) mixtures was studied. The apparatus and sphere-preparation method have been described previously (Ref.1. The particles (4.5, 4.0, 3.2 and 2.4 mm diameter heated to 800°C, were introduced singly into the combustion tube. The progress of combustion was followed by extinguishing the particles in water in a vessel placed at the entry, or at 50, 100 and 176 cm from the entry, and weighing after drying for ten minutes at 300°C. Particle surface temperatures were

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determined throughout their movement by a special, previously described (Ref.2) photopyrometric method. Fig.1 and 2 exemplify results obtained and show the distance moved by the particle as ordinates against the speed of movement (v) in m/sec^{-1} , temperature (T) in $^{\circ}\text{K}$, loss in weight (Δp) in mg and specific combustion rate (K) in $\text{mg/cm}^{-2} \text{ sec}^{-1}$. Fig.1 refers to particles 4.5 mm in diameter and a gas flow of 2.25 m/sec^{-1} , the corresponding values for Fig.2 being 2.4 and 0.2. In general K tended to reach a maximum and then slowly fall. The surface temperature of the smallest particles behaved similarly but with the larger particles the fall from the maximum was very steep. To determine the reaction constants of the carbon used, the combustion rates of single stationary particles were found with the aid of an apparatus providing for continuous weighing, with a sensitivity of 10^{-5} g and surface-temperature determination. Figure 3 shows: 1 = balance; 2 = quartz rod; 3 = mirror; 4 = slit; 5 = lens; 6 = illuminator; 7 = rotating camera; 8 = steel tube; 9 = valve;

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10 = thermocouple; 11 = particle; 12 = furnace;
13 = supporting table and 14 = galvanometer. In this
apparatus, the combustion of the particle was followed
under steady hydrodynamic conditions using a quartz
microbalance of sensitivity 10^{-5} gm and Fig.4 shows the
observed dependence of T, K and d on time t for a gas
flow of 0.25 m/sec. Fig.5 shows K as a function of T
for a 4.5 mm diameter particle and gas flows of 0.25,
0.5 and 1 m/sec. The determination of the overall
reaction constants (reaction gas transfer coefficients)
was based on a procedure previously used by other workers
(Ref.3-5). The method of determining the combustion
constant follows that developed earlier (Ref.3-5). The
quantity of oxygen supplied to the particle per unit area
of surface per unit time can be expressed thus:

$$q = \frac{1}{1/\alpha + 1/\alpha^0} C_0 \frac{\text{gm O}_2}{\text{cm}^2 \text{sec}} \quad (1)$$

where α is the reactional gas exchange constant,
Card 3/5 α^0 is the diffusional analogue of the coefficient of

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heat exchange and C_0 is the oxygen concentration at a distance from the particle. In Fig.6, the logarithm of α is plotted against the reciprocal temperature. The straight line can be expressed as

$\alpha = \alpha_0 \exp(-E^*/RT)$ (Eq.3') where E^* is the activation energy and the values obtained from the line of Fig.6 are $\alpha_0 = 3.71 \times 10^4$; $E^* = 19400$ cal/mol; under some conditions, however, E^* may attain double this value. The following conclusions are drawn:

1) in unsteady hydrodynamic and heat conditions, combustion of spherical fuel particles is characterised by a definite initial period during which the magnitude of the specific combustion velocity is determined by the steady state quantity α ; 2) the duration of the initial period of increasing combustion is only weakly dependent on particle diameter within the diameter limits 4.5 to 2.4 mm; 3) in order to describe the process under all conditions, it is necessary to discuss the variation of the reactional gas constant with time

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in terms of the solution of the corresponding diffusion
equation with internal sources. This paper is a
continuation of earlier work (Ref.1 and 2). There are
6 figures and 6 Soviet references.

SUBMITTED: 16th December 1957.

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PRIDANTSEVA, S.V., tekhn.red.

[Problems in the combustion of rocket fuels; collection of
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sbornik perevodov. Pod red. V.A.Popova. Moskva, Izd-vo
inostr.lit-ry, 1959. 456 p. (MIRA 13:6)
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Popov, U.A.

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| P.P. Nikul | The Mechanism of Combustion of Colloidal
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| I.S. Kraschenko | The Combustion Mechanism and Burning Velocity
in a Turbulent Flow |
| S.N. Kogarko | On the Burning Probability for Droplets of
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| PIYUNIN, B.I. | On the Elementary Theory for the Balance of
Powder and Explosive Combined Phases |
| Yu. S. Smirnov | On the Mechanism of Detonative Combustion |
| S.S. Galovian | The Interaction of Carbon with Carbon Monoxide
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| KHITICH, L.S. | The Carbon Residue Burning Characteristics of
Solid Fuel |
| RAVICH, M.P. | |
| KOTYUK, L.L. | |
| O.A. Yashchukova | The Investigation of the State of Explosion
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| U.A. Popov | On the Initiation in the Flame Front |
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Slow neutron scattering in antiferromagnets. Fiz. tver. tela
3 no. 9-2589-2603 S '61. (MIRA 14:9)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Neutrons—Scattering) (Magnetic materials)

~~POPOV, V.A.~~

Transients in magnetic systems with allowance for eddy currents.
Uch. zap. MGZPI no.9:83-89 '62. (MIRA 16:6)

(Electric currents, Eddy)
(Magnetism)

ZIMIN, YE. P.; POPOV, V. A.

"Determining the optimal composition of gaseous mixtures in the presence of seeding. "

paper presented at the Symposium on Magnetoplasmadynamic Electrical Power Generation, UK, 6-7 Sep 62

ZIMIN, YE. P.; POPOV, V. A.

" Research on the electrical conductivity of combustion products with potassium seeding. "

paper presented at the Symposium on Magnetoplasmdynamic Electrical Power Generation, UK, 6-7 Sep 62

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AUTHOR: Zimin, E. P. and Popov, V. A. (Moscow)

TITLE: Determination of the optimum composition of gaseous mixtures in the presence of a readily ionizable addition

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 3, 1962, 10-14

TEXT: The authors investigate the conductivity of a gaseous mixture, composed of a "diluter" of high ionization potential and "addition" of low ionization potential, as a function of their concentrations n_1 and n_2 and their collision cross-sections Q_1 and Q_2 , and establish the composition of the mixture corresponding to maximum conductivity. The practical interest of the study lies in the possibility it offers to increase the conductivity of the gas without heating it. For low degrees of ionization of the addition, the formula obtained reduces to the Rosa condition of maximum conductivity of the mixture

$$n_2/n_1 = Q_1/Q_2$$

The following conclusions are arrived at: a) by diluting the steam of readily ionizable metals with inert gases we can obtain mixtures of conductivity, for given temperature and pressure, higher than the conductivity of pure metal steam; b) the conductivity of such a mixture is not much higher than that of the pure metal steam but the realized economy of metal can be considerable; c) there are pressure and temperature limits to the

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S/207/62/000/006/007/023
E075/E135

AUTHORS: Popov, V.A., and Sheklein, A.V. (Moscow)
TITLE: Distribution of the relative intensities of the
radiations of radicals in laminar methane-air flame
PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki,
no.6, 1962, 35-38

TEXT: The distribution was investigated for C_2 and CH radicals in the flames of different compositions under atmospheric and low pressures. Quantitative measurements were carried out for the CH absorption band at 4312 \AA and the C_2 band at 5163 \AA . The relative radiation intensity of a radical in a given portion of the flame front was determined from the spectra, the registered signal being a combination of the radiation due to the radical and background radiation at a given frequency. Half-widths of the radiation zones (i.e. the zone extending from the maximum radiation intensity to half of this value) were determined from the curves of the distribution of radiation across the flame front. For all the radicals the plots of the half-widths against the
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B152/B102

AUTHORS: Zimin, E. P., Popov, V. A.

TITLE: Microwave investigation of the electrical conductivity of
a flame

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 3, 1962, 66-71

TEXT: A microwave method for studying the electrical conductivity of a flame is described and results of experiments with a methane-air flame to which some potassium is added are given. The experiments were carried out with a plane burner designed by Spalding that furnishes a plane flame. Electron concentration and the frequency of electron collision with other particles can be determined independently from one another. The microwave method immediately yields the electron component of conductivity. Two oppositely placed nets of platinum wires that were heat insulated by quartz capillaries were used as microwave guides. An aqueous solution of H_2CO_3 was added to the hot mixture. The theory of damping of electromagnetic waves in a homogeneous conducting medium is dealt with. If a

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